



OFFICE OF ECONOMIC DEVELOPMENT

SELF-ORGANIZED AND ELECTRICALLY CONDUCTING PEDOT POLYMER MATRIX FOR APPLICATIONS IN ENERGY GENERATION AND STORAGE



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Overview

Current approaches in battery application are focused on applying the binders that do not have sufficient electronic or ionic conductivity. Some of these binders require argon atmosphere that significantly increases the cost. The conducting binders known in the art require multiple steps for nanocomposite manufacturing. Researchers from SD Mines developed direct “in-situ” polymerization of a nanocomposite is a one-step process performed in ambient atmosphere.

Description

A novel synthesis route for the manufacturing of the nanocomposites based on self-organized and electrically conducting polymer matrix has been demonstrated for the first time. The proposed thermal polymerization has an advantage of “in-situ” polymerization of nanocomposites at close-to-ambient ambient conditions, even distribution of the solid phase within the polymer matrix, uniform coating of solid nanoparticles providing high percolation effect, and no need for additional removal of reaction by-products. The proposed self-organized and electrically conducting polymer matrix is intended for applications in batteries, electrolyzers, supercapacitors, fuel cells, or optically transparent devices.

LICENSING OPPORTUNITIES

South Dakota School of Mines Office of Economic Development is actively seeking exclusive and/or nonexclusive licensing opportunities. Joint development opportunities are also available.

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One Step Solid State Thermal Polymerization

